

Claims

- [c1] 1. An x-ray system utilized to acquire successive images, the x-ray system comprising:
- an x-ray source for generating x-rays;
 - a detector comprising detector elements arranged in rows and columns, said detector elements storing levels of charge; and
 - an image processor sensing levels of charge stored by said detector elements, said image processor including first and second offset image memories storing offset image data based on said levels of charge indicative of first and second modes of operation, respectively.
- [c2] 2. The x-ray system of claim 1, said image processor further comprising a recursive filter updating a first and second offset image when said detector is not exposed to said x-rays, said first and second offset images representative of said first and second modes of operation, respectively.
- [c3] 3. The x-ray system of claim 1, wherein a mode of operation comprises using a portion of said detector elements.
- [c4] 4. The x-ray system of claim 1, further comprising:
- an operator interface for choosing a mode of operation; and
 - a system controller identifying said mode of operation, said system controller choosing one of said first and second offset image memories based on said mode of operation.
- [c5] 5. The x-ray system of claim 1, further comprising a system controller choosing an offset image memory based upon a mode of operation, said offset image memory storing an offset image, said image processor subtracting said offset image from an incoming image.
- [c6] 6. The x-ray system of claim 1, said image processor further comprising:
- a first recursive filter updating a first offset image with at least one successive dark image when said detector is not exposed to said x-rays, said first offset image representative of said first mode of operation; and
 - a second recursive filter updating a second offset image with at least one

successive dark image when said detector is not exposed to said x-rays, said second offset image representative of said second mode of operation.

[c7] 7.The x-ray system of claim 1, wherein one of said first and second modes of operation combines said levels of charge stored by a plurality of said detector elements.

[c8] 8.The x-ray system of claim 1, further comprising:
a system controller choosing an offset image memory based upon a mode of operation, said offset image memory storing an offset image; and
a recursive filter updating said offset image when said detector is not exposed to said x-rays.

[c9] 9.The x-ray system of claim 1, further comprising a system controller identifying when said detector is exposed to said x-rays and choosing an offset image memory based on a mode of operation, said offset image memory storing an offset image, said image processor using said offset image to process an incoming x-ray image.

[c10] 10.A method for acquiring successive x-ray images using multiple modes of operation, the method comprising:
selecting a first mode of operation, said first mode of operation identifying detector elements utilized to create an image, said detector elements included in an x-ray detector;
selecting a first offset image corresponding to said first mode of operation from a plurality of stored offset images, said plurality of stored offset images corresponding to a plurality of modes of operation;
exposing said x-ray detector to a radiation source, said detector elements storing a level of charge representative of a level of radiation detected by said detector elements;
acquiring a first image representative of said levels of charge stored by said detector elements; and
utilizing said first offset image to process said first image.

[c11] 11.The method of claim 10, further comprising:

selecting a second mode of operation different from said first mode of operation;
selecting a second offset image corresponding to said second mode of operation from said plurality of stored offset images; and
processing a second image with said second offset image, said first and second images comprising successive images.

[c12] 12.The method of claim 10, further comprising:
acquiring a first dark image and at least a second dark image when said x-ray detector is not exposed to said radiation source;
storing said first dark image as an offset image in a first offset image memory when said first mode of operation is selected; and
recursively filtering said offset image with said at least a second dark image to create an updated offset image.

[c13] 13.The method of claim 10, wherein said first mode of operation comprises using each of said detector elements and a second mode of operation comprises using a portion of said detector elements.

[c14] 14.The method of claim 10, said first offset image comprising a set of values wherein each value represents said levels of charge stored by a plurality of said detector elements.

[c15] 15.The method of claim 10, further comprising:
recursively filtering said first offset image to create an updated offset image when said x-ray detector is not exposed to x-rays; and
storing said updated offset image in an offset image memory corresponding to said first mode of operation.

[c16] 16.A method for acquiring and storing multiple offset images for an x-ray system, the method comprising:
defining a first mode of operation, said first mode of operation identifying detector elements utilized to create an image, said detector elements included in an x-ray detector;
acquiring a first dark image representative of levels of charge stored by said

detector elements when said x-ray detector is not exposed to radiation;
storing said first dark image as an offset image in a first offset image memory
corresponding to said first mode of operation;
defining a second mode of operation different from said first mode of
operation;
acquiring a second dark image representative of the levels of charge stored by
said detector elements when said x-ray detector is not exposed to radiation;
and
storing said second dark image as a second offset image in a second offset
image memory corresponding to said second mode of operation.

[c17]

17.The method of claim 16, further comprising:
acquiring a dark image representative of levels of charge stored by said detector
elements after an x-ray exposure has terminated; and
recursively filtering said dark image to create an updated offset image
corresponding to a mode of operation utilized during said x-ray exposure.

[c18]

18.The method of claim 16, wherein one of said first and second modes of
operation combines said levels of charge stored by a plurality of said detector
elements.

[c19]

19.The method of claim 16, further comprising:
acquiring a first series of successive dark images utilizing said first mode of
operation;
processing said first series with a recursive filter to create a first updated offset
image;
acquiring a second series of successive dark images utilizing said second mode
of operation; and
processing said second series with said recursive filter to create a second
updated offset image.

[c20]

20.The method of claim 16, wherein one of said first and second modes of
operation comprises using a portion of said detector elements.